Welcome to the Department of Biochemistry and Molecular Biophysics

Washington University in St. Louis
School of Medicine

https://biochem.wustl.edu
1) Go to **biochem.wustl.edu**

2) Click **Media and Newsletters**

3) Click **Display TV Announcements**
Michael D. Onken, Kendall J. Blumer, & John A. Cooper

**Uveal melanoma cells use ameboid and mesenchymal mechanisms of cell motility crossing the endothelium**

The **Burgers Lab** studies DNA replication and DNA damage response in eukaryotic cells. Using yeast as a model organism, the lab integrates the biochemical analysis of DNA-protein interactions in purified model systems with the genetic analysis of targeted yeast mutants. Specific areas of interest are lagging strand DNA replication and Okazaki fragment maturation, damage induced mutagenesis, and DNA damage cell cycle checkpoints.

Right: DNA replication fork and Okazaki fragment maturation

See more research: [biochem.wustl.edu/spotlight](http://biochem.wustl.edu/spotlight)
Junctional Localization of Septin 2 Is Required for Organization of Junctional Proteins in Static Endothelial Monolayers

Arterioscler Thromb Vasc Biol. ATVBAHA120315472. doi: 10.1161/ATVBAHA.120.315472. (2020)
Congratulations to Dr. Holehouse

January 11th, 2021 – **Alex Holehouse, Ph.D.**, Assistant Professor of Biochemistry and Molecular Biophysics, received a new one-year grant award from Dewpoint Therapeutics for his research entitled “**Bioinformatic tools for the analysis of phase separating proteins**”.

View online! biochem.wustl.edu
Targeting multiple enzymes in vitamin K metabolism for anticoagulation

For the latest updates on coronavirus (COVID-19), please visit here: coronavirus.wustl.edu

Don’t forget to self-screen before coming into work! screening.wustl.edu
Vishnu C. Damalanka, Amarender Reddy Maddirala, & James W. Janetka

**Novel approaches to glycomimetic design: Development of small molecular weight lectin antagonists**

February 2\textsuperscript{nd}, 2021 - \textbf{Samantha Kirstin Barrick, PhD}, Postdoctoral Scholar in the department of Biochemistry and Molecular Biophysics, and the laboratory of Dr. Michael J. Greenberg, PhD, received a new three-year fellowship award from the National Institutes of Health, National Heart, Lung, and Blood Institute for her research entitled "\textit{Multiscale investigation of cardiomyopathy-associated mutations in metavinculin}".
Wayne M. Barnes, Zhian Zhang, & Milko B. Kermekchiev

A Single Amino Acid Change to Taq DNA Polymerase Enables Faster PCR, Reverse Transcription and Strand-Displacement

The Niemi Lab investigates how mitochondria are built, regulated, and maintained across physiological contexts. We blend biochemistry, systems biology, and physiology to understand mechanisms of mitochondrial regulation and how they influence metabolism and organellar function. Using insights gained from our molecular studies, we aim to understand how mitochondrial dysfunction contributes to mammalian pathophysiology, with the long-term goal of translating our discoveries into new therapeutic options to restore mitochondrial function in human disease.

See more research: biochem.wustl.edu/spotlight
Computer not working?
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Kacey Mersch, Tugba N. Ozturk, Kunwoong Park, Hyun-Ho Lim, & Janice L. Robertson

**Altering CLC stoichiometry by reducing non-polar side-chains at the dimerization interface**

Congratulations to Dr. Kinch

December 15th, 2020 - **Michael S Kinch, Ph.D.**, Associate Vice Chancellor, Director, Centers for Research Innovation in Biotechnology & Drug Discovery, and Professor of Biochemistry and Molecular Biophysics, received a new one-year grant award from Arnold Ventures for his research entitled “**CDEK: Clinical Data Experience Knowledge-base**”.

[View online! biochem.wustl.edu](http://biochem.wustl.edu)
February Publication

Alexander G. Kozlov & Timothy M. Lohman

Probing E. coli SSB Protein-DNA topology by reversing DNA backbone polarity

The Cooper Lab is interested in how the actin filaments in cells assemble and how that assembly controls cell shape and movement. One focus is an actin-binding protein called "capping protein," which caps one end of the actin filament. Capping protein is in turn regulated by intrinsically disordered regions of the CARMIL family of proteins, which exhibit positive linkage in their binding interactions.

See more research: biochem.wustl.edu/spotlight
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Department of Biochemistry and Molecular Biophysics
Washington University in St. Louis • School of Medicine
Shixuan Liu, Shuang Li, Guomin Shen, Narayanasami Sukumar, Andrzej M. Krezel, & Weikai Li

*Structural basis of antagonizing the vitamin K catalytic cycle for anticoagulation*

Research in the Lohman Lab focuses on obtaining a molecular understanding of the mechanisms of protein-nucleic acid interactions involved in DNA metabolism, in particular, DNA motor proteins (helicases/translocases) and single stranded DNA binding proteins. Thermodynamic, kinetic, structural and single molecule approaches are used to probe these interactions at the molecular level.

See more research: biochem.wustl.edu/spotlight
HAVING ISSUES AT WORK?
WE’RE HERE TO HELP.

Contact any of the following for help

John Cooper, Department Head, jcooper11@gmail.com, 314-362-3964
Jessica Kennedy – Title IX Director, jwkennedy@wustl.edu, 314-935-3118
Jessica Kuchta-Miller – Staff/Postdoc/Graduate Student Ombuds, 314-379-8110
Karen O’Malley – Medical Student Ombuds, 314-660-2089
Jim Fehr – Faculty Ombuds, 314-660-2089
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The **Bowman Lab** seeks to understand the distribution of different structures a protein adopts and how this ensemble determines a protein’s function. Examples of ongoing research projects include:

1. Understanding how mutations in the enzyme beta-lactamase change its specificity without changing the protein’s crystal structure.
2. Designing allosteric drugs.
3. Developing algorithms for quickly building models of the different structures a protein adopts.

See more research: [biochem.wustl.edu/spotlight](http://biochem.wustl.edu/spotlight)
Jesse G. Meyer, Natalie M. Niemi, David J. Pagliarini, & Joshua J. Coon

Quantitative shotgun proteome analysis by direct infusion

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<tr>
<th>Holiday</th>
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<th>Date Observed at WU</th>
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<td>Martin Luther King, Jr. Day</td>
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<td>Day after Thanksgiving</td>
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BMB SCIENCE FRIDAYS

a forum for new data, new ideas and works in progress

Science Fridays and Happy Hour: EVERY FRIDAY, starting at 4PM.
The **Galburt Lab** strives to understand the physical mechanisms of transcription initiation and other important DNA-protein interactions. More specifically, we use a variety of single-molecule and ensemble biophysical techniques including both optical and magnetic tweezers and fluorescent microscopy to investigate how the assembly of initiation complexes on gene promoters leads to DNA unwinding and transcription. Our work is currently focused on the mechanisms of basal transcription initiation in Eukaryotes and on factor-regulated transcription in Mycobacterium tuberculosis.

See more research: [biochem.wustl.edu/spotlight](http://biochem.wustl.edu/spotlight)
Spatial and temporal alterations in protein structure by EGF regulate cryptic cysteine oxidation

For the latest updates on coronavirus (COVID-19), please visit here:

coronavirus.wustl.edu

Don’t forget to self-screen before coming into work!

screening.wustl.edu
Congratulations to Dr. Li

January 22nd, 2021 - Weikai Li, PhD, Associate Professor of Biochemistry and Molecular Biophysics, along with Michael L. Gross, PhD, Professor of Chemistry, Immunology, and Medicine, and Michael J. Greenberg, PhD, Assistant Professor of Biochemistry and Molecular Biophysics, received a new three-year grant award from American Heart Association for their research entitled “Interdisciplinary structural studies of iron homeostasis in cardiovascular health”.

Structures of radial spokes and associated complexes important for ciliary motility

The **Greenberg Lab** focuses on how cytoskeletal motors function in both health and disease. Currently, the lab is studying mutations that cause familial cardiomyopathies, the leading cause of sudden cardiac death in people under 30 years old. The lab uses an array of biochemical, biophysical, and cell biological techniques to decipher how these mutations affect heart contraction from the level of single molecules to the level of engineered tissues. Insights into the disease pathogenesis will guide efforts to develop novel therapies.

See more research: [biochem.wustl.edu/spotlight](http://biochem.wustl.edu/spotlight)
Don't Forget!

Please keep your lab locked if no one is in there when you leave.

Don’t forget your keys!

Please remember to take OFF your gloves when leaving the lab.

Targeting primary and metastatic uveal melanoma with a G protein inhibitor

February 9th, 2021 – **Natalie M. Niemi, PhD**, Assistant Professor in the department of Biochemistry and Molecular Biophysics, received a one-year pilot and feasibility grant award from the Washington University Diabetes Research Center (DRC), sponsored by the National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) for her research entitled **“The role of the mitochondrial phosphatase Pptc7 in enabling metabolic flexibility”**.
Michael S. Kinch, Zachary Kraft, & Tyler Schwartz

Sources of innovation for new medicines: questions of sustainability